Appendix A: Hazard Identification Guidelines

APPENDIX A: HAZARD IDENTIFICATION GUIDELINES

These guidelines are intended to assist you with the hazard identification and risk analysis process for your school. Regardless of your current capability to reduce hazards, simply being familiar with the hazards in and around your school will be a large help in developing school emergency plans.

As you complete your hazard assessment, consider the potential impact of a major event on the community and the possible hazards a major event could cause. Taking a broad view will help you to anticipate extraordinary problems.

As you identify potential hazards, remember that many hazards can be reduced substantially or eliminated with little effort and no cost. Other hazard mitigation measures might be phased into the routine maintenance schedule. Because the more costly measures are likely to compete with other budget items, it may be desirable to develop a long-term hazard reduction plan. At any rate, as you identify potential hazards, record hazards that you can eliminate, those that you can reduce, and those that you can only anticipate.

The job aids included in this appendix are listed below.

PREPARING FOR HAZARD IDENTIFICATION

There are several tasks that you should accomplish to help you prepare for the formal hazard identification. Use the checklist below to help you complete these tasks.

Check ✓	Activity
☐	Obtain or draw a map of the school and school grounds. ☞ This map will be used to note potential hazards and the location of utilities, emergency equipment, and supplies. It will also provide a basis for establishing evacuation routes, identifying a safe open-space assembly area, and developing procedures for conducting emergency response activities.
☐	Mark the location of: ▪ All classrooms. ▪ The library and other activity rooms. ▪ Restrooms. ▪ Heating plant. ▪ Hallways. ▪ Doors and closets.
☐	Locate the following items on the map: ▪ Main shut-off valves for water and gas. ▪ Master electrical breaker. ▪ Heating and air-conditioning equipment. ▪ Stoves. ▪ Chemical storage and gas lines in laboratories. ▪ Hazardous materials stored by custodians and gardeners. ▪ Emergency lighting units. ▪ Fire extinguishers. ▪ First-aid equipment. ▪ Outside water faucets and hoses. ▪ Overhead power lines. ▪ Underground gas lines.

SCHOOL GROUNDS HAZARD ASSESSMENT

This checklist will help you identify hazards that exist on school property. Identifying these potential hazards will provide useful information for planning evacuation routes and assembly areas.

Begin your assessment of the school grounds with the school building itself. Then, assess other structures on the property. Finally, complete your assessment by surveying the grounds themselves.

Date Surveyed: _____ **Surveyed By:** _____

Hazard	Comments
School Building: ☐ Long, unsupported roof spans ☐ Large window panes (especially over exits) ☐ Heating and air conditioning units ☐ Overhangs ☐ Trees or shrubs that require pruning ☐ Other hazards (List)	
Other Structures: ☐ Unsecured portable structures ☐ Unsecured siding or roofing materials ☐ Incompatible chemical storage ☐ Inadequate ventilation ☐ Other fire hazards (List)	

SCHOOL GROUNDS HAZARD ASSESSMENT (CONTINUED)

Hazard	Comments
Playground: ☐ Equipment in need of repair ☐ Rocks or other material that could cause injury ☐ Fences in need of repair ☐ Exposed nails, screws, or bolts ☐ Other hazards (List)	
School Grounds: ☐ Trees or shrubs that present a fire hazard or wind hazard or provide areas for an intruder to hide ☐ Streams in close proximity ☐ Electric wires ☐ Gasoline or propane tanks ☐ Natural gas lines ☐ Fences in need of repair ☐ Other hazards (List)	

BUILDING HAZARD ASSESSMENT

This checklist can be used by administrators, teachers, or staff to assess hazards throughout the building that require mitigation. Be sure to check every room, including shop areas, custodian's closets, storage areas, and the gymnasium, and complete this form for each area surveyed. Use the information gathered during the hazard assessment to determine the scope of hazards throughout the school and to develop a plan and schedule to reduce the hazards.

Area: _____

Hazard	Comments
☐ Toxic, corrosive, and flammable materials not stored to withstand falling and breaking (Note: Be sure to check for cleaning compounds, art supplies, chemistry and science materials, swimming pool chemicals, etc.)	
☐ Hazardous materials located in areas that do not have warning signs	
☐ Unsecured appliances (e.g., water heaters, space heaters, toaster ovens, microwave ovens, etc.)	
☐ Unsecured fire extinguishers or fire extinguishers that require recharging	
☐ Unsecured filing cabinets or cabinets with inadequate drawer latches	
☐ Inadequately supported light fixtures	
☐ Unanchored table lamps	
☐ Extended, unsupported roof spans	
☐ Windows not composed of safety glass, especially near exits	
☐ Unsecured athletic equipment	
☐ Other hazards (List):	

CLASSROOM HAZARD ASSESSMENT

This checklist can be used by administrators, teachers, or staff to assess classroom hazards that can be eliminated at little or no cost. Complete this form for each classroom surveyed. Use the information gathered during the classroom hazard assessment to determine the scope of classroom hazards throughout the school and to develop a plan and schedule to reduce the hazards.

Room: _____ **Date Surveyed:** _____

Hazard	Comments
☐ Free-standing cabinets, bookcases, and wall shelves	
☐ Heavy objects on high shelves	
☐ Aquariums and other potentially hazardous displays located near seating areas	
☐ Unsecured TV monitors	
☐ Unsecured wall-mounted objects	
☐ Hanging plants above or near seating areas	
☐ Incompatible chemicals stored in close proximity (e.g., window cleaner and ammonia)	
☐ Paper or other combustibles (e.g., greasy rags) stored near heat source	
☐ Other hazards (List):	

IDENTIFYING POTENTIAL HAZARDS ALONG EVACUATION ROUTES

One key to developing procedures for a quick and orderly evacuation is a thorough assessment of the hazards likely to be encountered en route from classrooms and other activity rooms to safe, open-space areas. Use this form to review the evacuation routes from your school, marking hazards and potential hazards along the routes. It may be helpful to ask your local fire department to send an inspector to complete the survey with you.

Hazard	Comments
☐ Hallways and/or doors containing glass panels that are other than tempered glass or plexiglass	
☐ Lockers, bookshelves, or other storage units along hallways ☞ Hallways may be cluttered with debris from ceilings, fallen light fixtures, broken glass, and toppled storage units. Students should be advised to anticipate these hazards.	
☐ Lighting that is dependent on electricity rather than sunlight	
☐ Elevators ☞ Elevators are vulnerable to damage from fires, earthquakes, and other hazards. Signs should be posted near elevators prohibiting their use during emergencies.	
☐ Building exit routes that pass through arcades, canopies, or porch-like structures	
☐ Roofs with clay or slate tiles	
☐ Building facings that include parapets, balconies, or cornices	
☐ Gas, sewer, or power lines near the outdoor assembly area	
☐ Other hazards (List):	

IDENTIFYING POTENTIAL HAZARDS IN THE NEIGHBORHOOD AND COMMUNITY

Being aware of the potential hazards in the community can affect your school planning process. For example, knowing that a facility uses toxic chemicals in processing helps you plan for a hazardous materials emergency. Locate the potential hazards shown below on a street map of your community. Then, contact your local Emergency Manager to verify that you have identified all potential major hazards.

- ☐ Facilities containing toxic, chemically reactive, and/or radioactive materials

  ☞ Be sure to include both manufacturers and users (e.g., gas stations).

- ☐ High-voltage power lines
- ☐ Transportation routes of vehicles carrying hazardous materials (e.g., truck routes and railroad rights of way)
- ☐ Underground gas and oil pipelines
- ☐ Underground utility vaults and above-ground transformers
- ☐ Multistory buildings vulnerable to damage or collapse (e.g., unreinforced masonry construction)
- ☐ Water towers and tanks

INTERNATIONAL CHEMICAL SAFETY CARDS

POLYCHLORINATED BIPHENYL (AROCLOR 1254) ICSC: 0939

POLYCHLORINATED BIPHENYL (AROCLOR 1254)
Chlorobiphenyl (54% chlorine)
Chlorodiphenyl (54% chlorine)
PCB
Molecular mass: 327 (average)

CAS # 11097-69-1
RTECS # TQ1360000
ICSC # 0939
UN # 2315
EC # 602-039-00-4

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Irritating and toxic gases may be generated in a fire.		Powder, carbon dioxide.
EXPLOSION			
EXPOSURE		PREVENT GENERATION OF MISTS! STRICT HYGIENE!	
▪ **INHALATION**		Ventilation	Fresh air, rest. Refer for medical attention.
▪ **SKIN**	MAY BE ABSORBED! Dry skin, redness, chloracne (further see Inhalation).	Protective gloves Protective clothing	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
▪ **EYES**	Redness, pain	Safety goggles, face shield	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
▪ **INGESTION**	Headache, numbness, fever	Do not eat, drink, or smoke during work.	Rest. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELING
Consult an expert! Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment (extra personal protection: complete protective clothing including self-contained breathing apparatus).	Separated from food and feedstuffs. Cool. Dry. Keep in a well-ventilated room.	Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs. Xn symbol R: 33 S: 35 Note: C UN Hazard Class: 9 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0939

INTERNATIONAL CHEMICAL SAFETY CARDS (CONTINUED)

POLYCHLORINATED BIPHENYL (AROCLOR 1254) ICSC: 0939

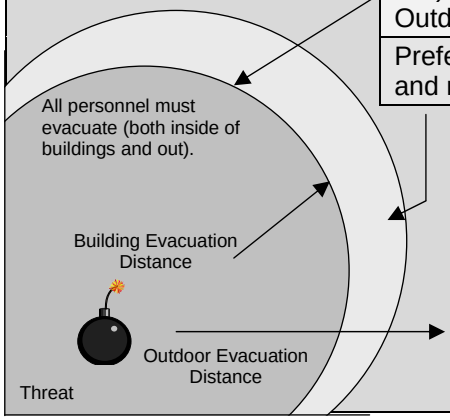
IMPORTANT DATA	**PHYSICAL STATE: APPEARANCE:** LIGHT YELLOW VISCOUS LIQUID. PHYSICAL DANGERS: **CHEMICAL DANGERS:** The substance decomposes in a fire producing irritating and toxic gases. OCCUPATIONAL EXPOSURE LIMITS (OELs): TLV: ppm, 0.5 mg/m^3 (skin) (ACGIH 1991-1992).	**ROUTES OF EXPOSURE:** THE SUBSTANCE CAN BE ABSORBED INTO THE BODY BY INHALATION OF ITS AEROSOL, THROUGH THE SKIN AND BY INGESTION. **INHALATION RISK:** A HARMFUL CONTAMINATION OF THE AIR WILL BE REACHED RATHER SLOWLY ON EVAPORATION OF THIS SUBSTANCE AT 20°C. **EFFECTS OF SHORT-TERM EXPOSURE:** THE SUBSTANCE IRRITATES THE EYES (SEE NOTES). **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** REPEATED OR PROLONGED CONTACT WITH SKIN MAY CAUSE DERMATITIS CHLORACNE. THE SUBSTANCE MAY HAVE EFFECTS ON THE LIVER. ANIMAL TESTS SHOW THAT THIS SUBSTANCE POSSIBLY CAUSES TOXIC EFFECTS UPON HUMAN REPRODUCTION.
PHYSICAL PROPERTIES	Relative density (water = 1): 1.5 Solubility in water: none	Vapour pressure, Pa at 25°C: 0.01 Octanol/water partition coefficient as log POW: 6.30 (estimated)
ENVIRONMENTAL DATA	In the food chain important to humans, bioaccumulation takes place, specifically in water organisms. It is strongly advised not to let the chemical enter into the environment.	
NOTES		
Changes into a resinous state (pour point) at 10°C. Distillation range: 365°-390°C. No open cup flash point to boiling. The symptoms other than the chloracne and liver effects may be in part due to contaminants of the PCB. Transport Emergency Card: TEC (R)-914		
ADDITIONAL INFORMATION		

ICSC: 0939	**POLYCHLORINATED BIPHENYL (AROCLOR 1254)**
IMPORTANT LEGAL NOTICE:	Neither the CEC or the IPCS nor any person acting on behalf of the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use.

TERRORIST BOMB THREAT STAND-OFF

Terrorist Bomb Threat Stand-Off

THREAT DESCRIPTION	EXPLOSIVES CAPACITY[1] (TNT EQUIVALENT)	BUILDING EVACUATION DISTANCE[2]	OUTDOOR EVACUATION DISTANCE[3]
PIPE BOMB	5 LBS/ 2.3 KG	70 FT/ 21 M	850 FT/ 259 M
BRIEFCASE/ SUITCASE BOMB	50 LBS/ 23 KG	150 FT/ 46 M	1,850 FT/ 564 M
COMPACT SEDAN	500 LBS/ 227 KG	320 FT/ 98 M	1,500 FT/ 457 M
SEDAN	1,000 LBS/ 454 KG	400 FT/ 122 M	1,750 FT/ 534 M
PASSENGER/ CARGO VAN	4,000 LBS/ 1,814 KG	640 FT/ 195 M	2,750 FT/ 838 M
SMALL MOVING VAN/DELIVERY TRUCK	10,000 LBS/ 4,536 KG	860 FT/ 263 M	3,750 FT/ 1,143 M
MOVING VAN/ WATER TRUCK	30,000 LBS/ 13,608 KG	1,240 FT/ 375 M	6,500 FT/ 1,982 M
SEMI-TRAILER	60,000 LBS/ 27,216 KG	1,570 FT/ 475 M	7,000 FT/ 2,134 M



All personnel must either seek shelter inside a building (with some risk) away from windows and exterior walls, or move beyond the Outdoor Evacuation Distance.

Preferred area (beyond this line) for evacuation of people in buildings and mandatory for people outdoors.

[1] Based on maximum volume or weight of explosive (TNT equivalent) that could reasonably fit in a suitcase or vehicle.
[2] Governed by the ability of an unstrengthened building to withstand severe damage or collapse.
[3] Governed by the greater of fragment throw distance or glass breakage/falling glass hazard distance. Note that pipe and briefcase bombs assume cased charges which throw fragments farther than vehicle bombs.